Air Education and Training Command



Occupational Survey
Report
AFSC 2E1X1
Satellite, Wideband, and
Telemetry Systems

Lt Joshua Smalley 2 August 02

Report Documentation Page			
Report Date 02AUG2002	Report Type N/A	Dates Covered (from to)	
Title and Subtitle		Contract Number	
Occupational Survey Repor Wideband, and Telemetry S		Grant Number	
		Program Element Number	
Author(s)		Project Number	
		Task Number	
		Work Unit Number	
Performing Organization Name(s) and Address(es) OCCUPATIONAL ANALYSIS PROGRAM AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON AIR EDUCATION and TRAINING COMMAND 1550 5th STREET EAST RANDOLPH AFB, TEXAS 78150-4449		IR	
Sponsoring/Monitoring Agency Name(s) and Address(es)		Sponsor/Monitor's Acronym(s)	
		Sponsor/Monitor's Report Number(s)	
Distribution/Availability S Approved for public release			
Supplementary Notes See Also ADM001431, The	e original document contains	color images.	
Abstract			
Subject Terms			
Report Classification unclassified		Classification of this page unclassified	
Classification of Abstract unclassified		Limitation of Abstract UU	
Number of Pages 55		'	

Air Force Occupational Measurement SQ



AFOMS/OMYO

1550 Fifth Street East Randolph AFB, TX 78150 DSN 487 – 6811

https://www-r.omsq.af.mil/OMY/indexomy.htm



Overview



- Survey background
- Survey results
- Implications and way ahead



Work Performed



- Deploy, operate, and sustain ground and space based satellite, Beyond-Line-of-Sight wideband communications, telemetry, and instrumentation systems
- Manage and perform design support, installation, calibration, testing, operation, maintenance, and repair of facilities, systems, and equipment
- Monitor and direct performance checks and measurements
- Establish and maintain communication links with distant terminals



Survey Background





- Survey initiated to obtain data to:
 - Evaluate current classification and training documents
 - Support promotion test development
- Last Occupational Survey Report (OSR) - June 1997
- Current survey data collected-October 2001-January 2002
- Components Surveyed:
 - Active Duty: 3-, 5-, and 7-Skill Levels
 - Guard: 5- and 7-Skill Levels
 - Reserve: 5- and 7-Skill Levels





Current Training Program



AFSC awarding course

- Prerequisite L3AQR2E131-650 Electronic Principles course at Lackland AFB TX, 53 academic days
- Detachment 1, 338 TRS, Ft Gordon AIN, GA
- E3ABP2E131-000, Satellite, Wideband, and Telemetry
 Systems Apprentice Course, 89 academic days
- 44 Semester hours for CCAF

Programmed TPR
 Programmed Elimination Rate

FY03: 320 students FY03: 6%

FY04: 329 students FY04: 6%



Survey Sample Characteristics



	<u>AD</u>	<u>AFRC</u>	<u>ANG</u>	<u>Total</u>
Assigned*	2,369	59	1,466	3,894
Mailed Out	1,827	37	1,305	3,169
Sample	937	3	478	1,418
Usable Returns	51%	8%	37%	45%

- Average time in career field for AD: 7 yrs 7 months
- Average TAFMS for AD: 9 yrs
- Percent of AD in first enlistment: 27%

^{*} Assigned as of October 01



Skill & Paygrade Characteristics



	Assigned*	Sample
3-Level -	18%	18%
5-Level -	51%	52%
7-Level -	31%	30%

Paygrade Distribution***

			Assigned*	Sampl
	E-1 - E	-3 -	17%	13%
	E-4	-	24%	28%
	E-5	-	26%	26%
* Assigned as of Ostober 01	E-6	-	18%	18%
* Assigned as of October 01**Indicates less than one percent	E-7	-	15%	14%
***Columns may not add to 100 due to rounding error	E-8	-	**	0%



Command Representation



















Command	Assigned %""	Sample %
AETC	2	3
AMC	4	6
ACC	20	23
AFMC	6	5
USAFE	9	9
PACAF	8	10
AFSOC	1	1
AFRC	2	*
ANG	38	34
EUR	*	*
AFSPC	8	8
AIA	*	*
AFOTE	*	*



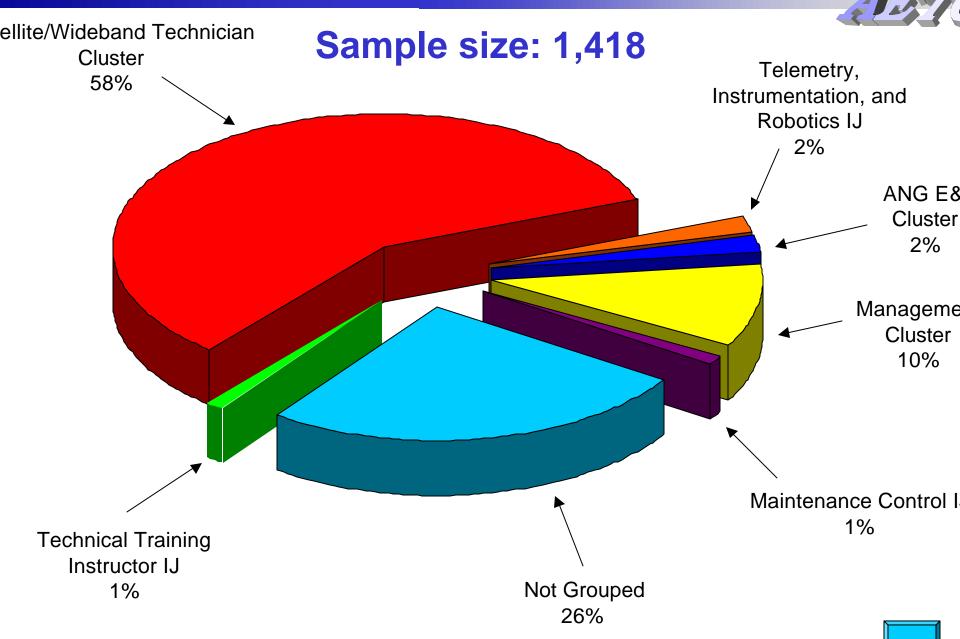
^{*} Indicates less than one percent

^{**} Assigned as of October 01



Job Structure





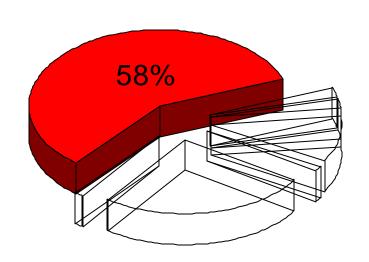


Cluster (N=825)



- Perform system power ups/power downs
- Perform corrosion control
- Operationally check system or test equipment
- Remove or replace air filters
- Visually inspect antennas
- Perform PMIs on antenna systems
- Visually inspect waveguides

Fixed Antenna Job Satellite/Wideband Tech Job AFSAT/MU STAR Crow Chief Job
AFCAT/MIL CTAD Crow Chief Joh
AFSAT/MILSTAR Crew Chief Job
Ground Radio Job

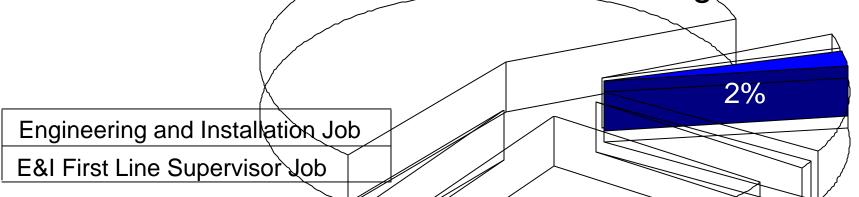




ANG E&I Cluster (N=25)



- Install or remove fixed communications equipment
- Install communications equipment
- Interpret blueprints, cabling, circuit or wiring schematic diagrams
- Install equipment grounds
- Install or remove cable ladders
- Install or remove electrical conduits
- Install cable assemblies or internal wiring



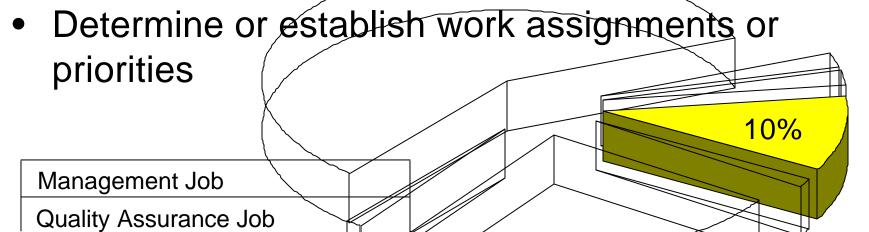


Management Cluster (N=136)





- Inspect personnel for compliance with military standards
- Write recommendations for awards or decorations
- Counsel subordinates concerning personal matters
- Evaluate personnel for compliance with performance standards
- Conduct self-inspections or self-assessments



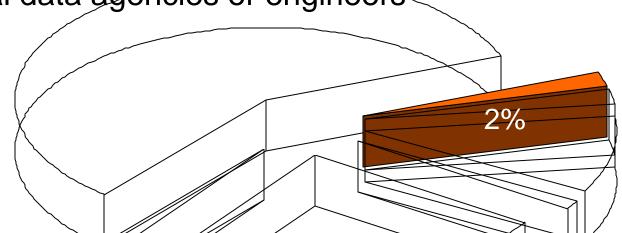


Independent Jobs



- Telemetry, Instrumentation, and Robotics IJ (N=29)
 - Operationally check system or test equipment
 - Evaluate new, modified, or prototype equipment
 - Adjust user-calibrated test equipment
 - Coordinate instrumentation checkouts with other test teams

 Coordinate test item or equipment preparations with technical data agencies or engineers





Independent Jobs



- Technical Training Instructor IJ (N=18)
 - Counsel trainees on training progress
 - Develop written tests
 - Conduct formal course classroom training
- Maintenance Control IJ (N=12)
 - Retrieve CAMS, REMIS, IMMP, or G081 listings or reports
 - Review preventive maintenance schedules
 - Update EIL and master PMI listings
 - Compile data for records, reports, logs, or trend analyses



Career Ladder Progression



- 3- and 5-skill-level personnel
 - Work in the most technical jobs in the career field
 - Spend most of their time on technical tasks
- 7- skill-level personnel
 - Continue to perform technical tasks
 - However, take on supervisory, training, and administrative duties



DAFSC



	DAFSC	DAFSC	DAFSC
	2E131	2E151	2E171
	(N=251)	(N=739)	(N=428)
Satellite/Wideband Technician Cluster	72	61	45
Telemetry, Instrumentation, & Robotics IJ	1	2	3
ANG Engineering and Installation Cluster	0	2	3
Technical Training Instructor IJ	0	1	2
Maintenance Control IJ	0	1	1
Management Cluster	0	3	26
Not Grouped	27	30	20



AD DAFSC

crociti Aoross opesiaity



	DAFSC	DAFSC	DAFSC
	2A734	2A754	2A774
	<u>(N=146)</u>	(N=244)	(N=83)
General Survival Equipment Maint IJ	62	68	52
Personnel Parachute Maintenance IJ	5	1	*
Flotation Device Maintenance IJ	15	8	1
Management/Supervisory Cluster	0	8	45
Prot Cloth and Cover Fabric/Maint IJ	1	1	0
Equipment Maintenance IJ	2	2	0
Cargo Parachute IJ	1	6	0
Not Grouped	14	6	2

^{*} Less than 1 percent



ANG DAFSC



	DAFSC	DAFSC
	2A754	2A774
	(N=84)	<u>(N=119)</u>
General Survival Equipment Maint IJ	73	86
Flotation Device Maintenance IJ	21	6
Management/Supervisory Cluster	0	7
Prot Cloth and Cover Fabric/Maint IJ	1	*
Not Grouped	5	1

^{*} Less than 1 percent



AFRC DAFSC



	DAFSC	DAFSC
	2A754	2A774
	<u>(N=58)</u>	<u>(N=63)</u>
General Survival Equipment Maint IJ	76	70
Flotation Device Maintenance IJ	22	14
Management/Supervisory Cluster	*	13
Not Grouped	2	3

^{*} Less than 1 percent



Percent Time Spent on Duties

	DAFSC	DAFSC	DAFSC
	2E131	2E151	2E171
	(N=251)	(N=739)	(N=428)
Performing General Repair Activities	22	20	12
Maintaining Fixed And Mobile Antenna Systems	12	10	7
Maintaining Tracking Systems	3	2	1
Maintaining Receivers And Downlink Systems	7	6	3
Maintaining Transmitters And Uplink Systems	5	4	2
Maintaining Air Force Satellite Communications	3	3	1
(AFSATCOM) And MILSTAR Systems			
Performing Aircrew Activities	1	*	*
Maintaining Multiplexers, Modems, And Associated	9	7	4
Interface Equipment			
Maintaining Common or Miscellaneous Subassemblies	7	5	3
and Systems			
Performing Equipment Operations Activities	10	10	6
Performing Equipment Installation and Mission Support	t 3	4	5
Activities			

^{*} Less than 1 percent



Percent Time Spent on Duties

Januar Lagracian



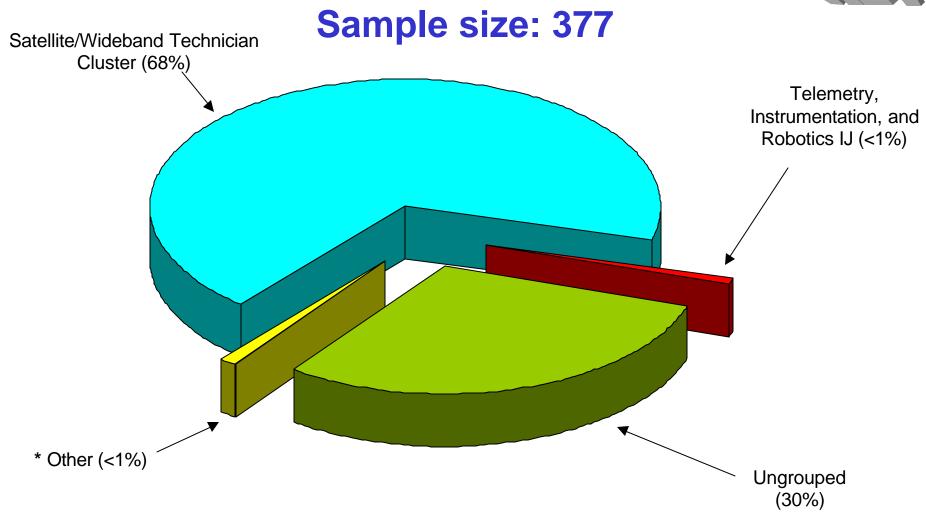
	DAFSC	DAFSC	DAFSC
	2E131	2E151	2E171
	(N=251)	(N=739)	(N=428)
Performing Maintenance Management Activities	3	4	6
Performing Administrative And Technical Order (TO)	3	4	6
System Activities			
Performing General Supply And Equipment Activities	3	3	4
Performing Mobility And Contingency Activities	5	7	10
Performing Training Activities	2	5	8
Performing Management And Supervisory Activities	1	6	21



First-Enlistment Job Structure







^{*}Other includes ANG E&I Cluster (<1%) & Maintenance Control IJ (<1%) IJ =Independent Job



Representative Tasks

	Percent
	Members
	Performing
<u>Tasks</u>	(N=377)
Perform system power downs	87
Perform system power ups	86
Remove or replace light bulbs	85
Perform corrosion control	79
Remove or replace air filters	79
Remove or replace CCAs	76
Operationally check system or test equipment	74
Remove or replace minor plug in or screw in electronic components	72
Perform PMIs on antenna systems	71
Fabricate or repair equipment cables	69
Perform preventive maintenance inspections (PMIs) on CCAs	68
Visually inspect antennas	68
Perform PMIs on down converters	66
Adjust circuit card assemblies (CCAs)	66



Satellite Communications

Multimeters, Digital

Oscilloscopes

Dummy Loads

Meters, Power

Analyzers, Spectrum

Attenuators, Variable

Counters, Frequency

Attenuators, Decibel (Db)

Attenuators, Fixed

Generators Signal

Built In Test Equipment

Support Equipment Used/Operated

and the state of t
12

75

87

80

80

79

73

73

70

69

64

60 59

	Tools & Equipment	SAFOCANI AFE TOM
		134
		Percent
		Members
		Performing
<u>Equipment</u>		(N=377)
Systems Used/Operate	∍d	
Antennas		81
Multiplexers		79
Modems		77



(CTS) Analysis



- CTS is well supported by survey data
 - Only four CTS items were unsupported

- Large number of technical tasks performed by 20 percent or more of members were not referenced to CTS
 - These should be reviewed for possible inclusion in CTS



Unsupported CTS Elements





Examples

		Perd Mem <u>Perfo</u> i	bers				
		1st	1st	Tng	Tsk		
Unit	Learning Objective	Job	Enl	Emp	Dif	ATI	
7.2.	Troubleshoot and repair timing synchronization equipment						
Task	I0488. Troubleshoot or repair frequency standards	13	18	2.59	6.26	7	
9.15	Perform an operational check of the TRC 170 Tropospheric Scatter equipment communications link						
Task	J0567. Verify operational readiness with ground network or distant terminals	12	18	2.85	4.44	7	
16.1	Perform cable transmission line measurements						
Task	J0560. Perform transmission line loss measurements	7	11	1.93	4.97	7	

Mean TE Rating is 1.75, Standard Deviation is 1.29 (HIGH TE= 3.04)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)





Requiring Review



			Perd Mem <u>Perfo</u>	bers				
l l.a. i.t	La amain a Ohia ativa	Prof Code	1st	1st	Tng	Tsk	Λ .	
Unit	Learning Objective	Code	Job	Enl	Emp	Dif	ATI	
6.6.4 Task	Classified material control H0357. Destroy or dispose of Classified or sensitive unclassified materials		30	38	2.80	4.17	15	
8.4.8 Task	Encryption or masking devices E0208. Operate cryptographic equipment	Α	36	41	4.63	5.05	12	
8.6.5.2 Task	Fiber optic E0233. Perform fault isolation on fiber optic systems	А	29	35	6.43	6.32	12	

Mean TE Rating is 2.16, Standard Deviation is 1.35 (HIGH TE= 3.51)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Tasks not Referenced to CTS





Parcant

		Leic	CIII				
	Members						
		<u>Perfor</u>	<u>rming</u>				
		1st	1 st	Tng	Tsk		
<u>Tasks</u>		<u>Job</u>	<u>Enl</u>	<u>Emp</u>	<u>Dif</u>	<u>ATI</u>	
A0022	Perform system power-downs	84	87	5.98	2.40	13	
A0023	Perform system power-ups	84	86	5.93	2.46	13	
D0136	Adjust amplifiers	60	61	4.51	5.38	18	
A0013	Install communications equip	57	60	4.41	5.60	18	



Plan of Instruction (POI) Analysis





- POI is generally well-supported by survey data
 - Six learning objectives matched to JI tasks performed by less than 30 percent of members
- Tasks not referenced to any POI learning objective should be reviewed for possible inclusion in POI



Unsupported POI Objectives





Examp	_	oont			
	Men	cent nbers <u>orming</u>			
	1 st	1 st	Tng	Tsk	
I.4.b. Given a transmission line (coaxial cable) with an attenuator of undetermined value, a signal generator and a power meter, determine the amount of attenuation in the transmission line system within 5%	<u>Job</u>	<u>Enl</u>	<u>Emp</u>	<u>Dif</u>	<u>AT</u>
J560 Perform transmission line loss measurements	7	11	1.93	4.97	7
/III.5.c. Given the appropriate technical data and a scenario, research the required parts information without error N666 Establish requirements for equipment, tools, parts or supplies	17	24	.80	5.00	2

lean TE Rating is 1.75, Standard Deviation is 1.29 (HIGH TE= 3.04) lean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)





Tasks not Referenced to POI





Percent

		I CICCI	IL				
	Members						
		<u>Perform</u>	<u>ing</u>				
		1 st	1 st	Tng	Tsk		
<u>Tasks</u>		<u>Job</u>	Enl	<u>Emp</u>	<u>Dif</u>	<u>ATI</u>	
A0022	Perform system power-downs	84	87	5.98	2.40	13	
A0023	Perform system power-ups	84	86	5.93	2.46	13	
A0007	Fabricate or repair equip cables	55	69	3.66	5.39	18	
B0105	Visually inspect antennas	60	68	4.02	2.36	13	

(AFSC 2A7X4 vs. Comparative Sample)

		Months		49-96 Months		onths
	2001 2A7X4 (N=170)	Comp Sample* (N=1801)	2001 2A7X4 (N=92)	Comp Sample* (N=828)	2001 2A7X4 (N=211)	Ccomp Sample* (N=2390)
ob interesting	66	87	68	88	85	92
alents well utilized	48	80	59	80	81	86
raining well utilized	90	90	85	89	89	84
ense of ccomplishment	73	84	73	84	81	84
lan to reenlist	51	46	63	57	71	63

emparative sample of AFSCs surveyed in the last 12 months includes: 2A3X2, 2A5X1J, and 2A6X4



(Current vs. Previous Study)



ob interesting
alents well utilized
raining well utilized
ense of ccomplishment
lan to reenlist

1-48 M	49-96	
	1997 (N=388)	(N=133
62	64	65
74	71	79
77	74	73
56	58	59
34	49	53

2002	Months 1997 (N=326)	97+ M 2002 (N=427)	onths 1997 (N=679)
65	62	71	72
79	73	82	82
73	67	75	69
59	60	67	68
53	56	55	73



(Across Specialty Jobs)



	Satellite/ Wideband Technician Cluster (N=825)	Telemetry, Instrmnt & Robotics IJ (N=29)	ANG E & I Cluster (N=25)	
Job interesting	72	97	76	
Talents well utilized	83	93	80	
Training well utilized	87	76	64	
Sense of accomplishment	65	93	52	
Plan to reenlist	56	45	84	



(Across Specialty Jobs cont.)

	Technical Training Instructor IJ (N=18)	Maintenance Control IJ (N=12)	Mgmt Cluster (N=136)
Job interesting	89	42	74
Talents well utilized	100	59	88
Training wall utilized	95	67	76
Training well utilized	90	07	70
Sense of accomplishment	83	50	74
Plan to reenlist	56	67	54



First-Term Airmen (N=375)



	Percent	
Planning to Reenlist (N=128)	Responding	Average
Job security	69	2.56
Military-related education & training opportunities	65	2.45
Off duty education or training opportunities	61	2.54
Military lifestyle	56	2.11
Medical or dental care for AD member	55	2.47
Planning to Separate (N=247)		
Military lifestyle	63	2.29
Pay and allowances	62	2.39
Civilian job opportunities	62	2.59
Recognition of efforts	37	2.34
Esprit de corps/morale	36	2.48



Second-Term Airmen (N=132)



Percent	
Responding	Average
69	2.57
62	2.64
58	2.39
56	2.33
55	2.56
66	2.45
59	2.75
52	2.25
41	2.60
	2.73
	Responding 69 62 58 56 55 66 59 52



Career Airmen (N=267)



Percent	
Responding	Average
79	2.67
56	2.62
50	2.26
50	2.26
45	2.43
67	2.36
64	2.24
55	2.67
39	2.23
39	2.62
	79 56 50 50 45 67 64 55 39



Summary of Results



- Career ladder progression typical
 - Highly technical at 3-skill progressing to more managerial at 7-skill level and beyond
- Career ladder documents well-supported by survey data
 - CTS and POI provide comprehensive coverage of work performed by career ladder
 - Review of some items warranted
- Job satisfaction indicators
 - Most are similar when compared to previous study
 - Lower in the plan to reenlist area for first-term and career airmen



Way Ahead



- OSR Delivery Trip TBD
- Utilization and Training Workshop (U&TW) TBD
- Next SKT rewrite (major) is scheduled for Mar 03



Questions?





Visit our web site at:

https://www-r.omsq.af.mil/OMY/indexomy.htm

E-Mail: joshua.smalley@randolph.af.mil



Integrity - Service - Excellence





Back-Up Slides



Job Survey Background



- Previous JI and OSR
 - JI: 2E1X1-Feb 96, CMSgt McDaniel
 - OSR: 2E1X1-Jun 97, Lt Murphy II
 - Programming Support- Ms Guesman
- Issues from Last Post-Analysis Review
 - None

JI Development (# Interviewed)

Ft Gordon AIN, Det 1, GA (Tech School) (4)	22-24 May
Barksdale AFB, LA (4)	05 Jun
Tinker AFB, OK (6)	07 Jun
MacDill AFB, FL (6)	03 Jul
McGuire AFB, NJ (7)	05 Jul
FE Warren AFB, WY (6)	10 Jul
Buckley AFB, CO (5)	12 Jul
Peterson AFB, CO (9)	13 Jul
Schriever AFB, CO (11)	16 Jul
Beale AFB, CA (5)	24 Jul
Vandenberg AFB, CA (5)	27 Jul
Eglin AFB, FL (11)	09 Aug



Job Structure Glossary



- Job: A group of similar positions where incumbents perform many of the same tasks and spend relatively the same amount of time performing these tasks
- **Cluster**: A series or group of related *jobs* which are distinguishable from each other on some variable (weapon system maintained, ratio of supervisory to technical tasks, etc.)
- Independent Job: A job that does not fall within any cluster
- N: Number in sample



Career Ladder Progression



- "Typical" career ladder progression
 - 3-Skill-Level apprentices perform a very technical job which include very few administrative/supervisory tasks
 - 5-Skill-Level journeymen still primarily perform a technical job, but acquire a mix of administrative/supervisory tasks
 - 7-Skill-Level managers, and above, primarily perform supervisory, managerial, and administrative tasks, with relatively few technical tasks
- "Atypical" career ladder progression
 - 7-Skill-Level personnel are still spending a significant amount of their total job time performing technical duties, with relatively few administrative/supervisory tasks



Training Document Analysis



- ABI
- Tasks from job inventory are matched to items in the STS and POI
 - Match is usually conducted with technical school personnel
- Final product provides technical school with data indicating applicability of training documents to work performed in the field in terms of:
 - Percent members performing (PMP) from AETCI 36-2601
 - » 20% PMP for STS
 - » 30% PMP for POI
 - TE and TD ratings
- Listing of tasks not referenced to training document also provided
 - May indicate areas where training coverage is lacking





Task Factor Definitions



- Training Emphasis (TE): Task list completed by senior NCOs identifying those tasks that should be emphasized for structured training of first-term airmen
- Task Difficulty (TD): Task list completed by senior NCOs which rates the relative difficulty of each task to learn
- Automated Training Indicators (ATI): Indicators derived from comparing percent performing data with TE and TD data to assist in making training decisions



Retention Dimensions





- Military lifestyle
- Pay and allowances
- Bonus or special pay
- Retirement Benefits
- Military related education/Training opportunities
- Off-duty education and training opportunities
- Medical or dental care for active duty member
- Medical or dental care for family members
- Base housing
- Base services
- Childcare needs
- Spouse's career
- Civilian job opportunities
- Equal employment opportunities

- Number of PCS moves
- Location of present assignment
- Number/Duration of TDY's or deployments
- Work schedule
- Additional duties
- Job security
- Enlisted Evaluation System
- Promotion opportunities
- Training/Experience of unit personnel
- Unit manning
- Unit resources
- Unit readiness
- Recognition of efforts
- Esprit de corps/Morale
- Leadership of immediate supervisor
- Senior Air Force leadership



First-Term Airmen (N=375)



Percent		
Responding	Average	S.D.
69	2.56	.67
65	2.45	.64
61	2.54	.59
56	2.11	.72
55	2.47	.65
63	2.29	.79
62	2.39	.72
62	2.59	.69
37	2.34	.73
36	2.48	.72
	69 65 61 56 55 63 62 62 62 37	Responding Average 69 2.56 65 2.45 61 2.54 56 2.11 55 2.47 63 2.29 62 2.39 62 2.59 37 2.34



Second-Term Airmen (N=132)



	Percent		
Planning to Reenlist (N=71)	Responding	Average	S.D.
Job security	69	2.57	.67
Retirement benefits	62	2.64	.57
Bonus or special pay	58	2.39	.69
Military lifestyle	56	2.33	.75
Medical or dental care for AD member	55	2.56	.63
Planning to Separate (N=61)			
Pay and allowances	66	2.45	.74
Civilian job opportunities	59	2.75	.49
Military lifestyle	52	2.25	.83
Number/duration of TDYs or deployments	41	2.60	.57
Location of present assignment	36	2.73	.62



Career Airmen (N=267)



Percent		
Responding	Average	S.D.
79	2.67	.54
56	2.62	.61
50	2.26	.70
50	2.26	.68
45	2.43	.63
67	2.36	.71
64	2.24	.87
55	2.67	.58
39	2.23	.80
39	2.62	.62
	79 56 50 50 45 67 64 55 39	Responding Average 79 2.67 56 2.62 50 2.26 50 2.26 45 2.43 67 2.36 64 2.24 55 2.67 39 2.23